

Abstract

Storage of Fuel Cell Energy
During Startup and Shutdown

During startup or shutdown of a fuel cell power plant, the electric energy generated by consumption of reactants is extracted by a storage control (200) in response to a controller (185) as current applied to an energy storage system 201 (a battery). In a boost embodiment, an inductor (205) and a diode (209) connect one terminal (156) of the stack (151) of the battery. An electronic switch connects the juncture of the inductor and the diode to both the other terminal (155) of the stack and the battery. The switch is alternately gated on and off by a signal (212) from a controller (185) until sufficient energy is transferred from the stack to the battery. In a buck environment, the switch and the inductor (205) connect one terminal (156) of the stack to the battery. A diode connects the juncture of the switch with the inductor to the other terminal (155) of the fuel cell stack and the battery.